Curriculum Enhancement through Development of Interdisciplinary Courses in Nuclear Science and Engineering

Executive Summary

The purpose of this proposal is to enhance the current undergraduate and graduate curriculum in Nuclear Engineering and Radiation Health Physics (NERHP) and expand the degree options at Oregon State University (OSU). The main objective of the proposed courses is to advance the educational infrastructure at the department and allow education of a new generation of interdisciplinary educated nuclear engineers and scientists that are needed to allow the Nation to safely move its nuclear energy initiatives forward. This proposal seeks to leverage our existing course offerings, increase diversity in disciplines, and utilize our faculty research expertise in radiochemistry and experimental facilities of the Radiation Center (RC).

We intend to create two new radiochemistry courses that will complement our current (and only) course in radiochemistry, and several other courses in the departmental curriculum. Interdisciplinary by their nature, these courses are designed for students of several majors (RHP, Chemistry, Pharmacy, Chemical Engineering, and Environmental Engineering). The "Chemistry of Nuclear Fuel Cycle" course is expected to engage about 70 students, including (based on current enrollment) about 35 undergraduate students, 15 graduate onsite students, and 20 e-distance graduate students. The second course, "Radionuclides in the Life Sciences" will be accessible to multiple disciplines across the university; enrollment is anticipated to be 20 to 30 students. The Radiochemistry course, currently offered as a lecture/laboratory course, serves approximately 35-40 graduate students annually. Based on our preliminary survey, it is expected that the new "Radionuclides in the Life Sciences" course will be attractive for many students on campus.

In summary, at least 100 students per year will benefit from the proposed curricular changes. The proposed courses will also fit within a radiochemistry cluster that is a foundational part of our long-term strategy toward creating an interdisciplinary graduate program in Radiochemistry at OSU. The proposed interdisciplinary graduate program will be available for students in RHP, Nuclear Engineering, Chemistry, or Chemical Engineering (students of Pharmacy and other biomedical sciences will also be invited to participate). Students will obtain in-depth understanding of course material identified as "technical area(s) of interest" by the NRC.

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